

Description

[Insert title of invention]Level Putting Device

BACKGROUND OF INVENTION

[0001] This invention relates to golf club alignment devices, in particular putting alignment devices incorporating one or more liquid or mechanical levels. Keeping the putter face square to the target line and controlling the levelness of the swing through the ball will help the user to maintain consistency when putting.

[0002] 1. Background

[0003] Putting is an important part of the game of golf. Roughly 30% to 50% of strokes occur on or around the green for most golfers. Most professional golfers would, in fact, say that it is the most important part of the game. Their ability to make a relatively high percentage of fairly easy putts is critical to maintaining a competitive edge. Most highly skilled golfers devote a large portion of their practice hours on the putting green or indoor facilities. Less skilled

golfers should probably devote more.

[0004] Putting is a very difficult skill to perfect. It is the only shot in which the ball maintains contact with the ground over its entire distance. As a consequence, there are a number of factors that influence the result of a putt. The quality of the putting surface, the amount of break or bend in the putt, the direction of the putter face at impact, the path of the putter head at impact, the location of the impact point on the putter face, the amount of relative loft at impact, and the amount of force applied are just some of the factors involved. The lie or angle at which the putter shaft relates to the ground is also critical. The lie of the putter determines the perpendicularity of the putter head to ground.

[0005] Obtaining a putter that properly fits the golfer is key to successful putting. Calculating the correct lie of the putter and ensuring the clubface is perpendicular to the ball is important when taking the shot. Typically the clubface of the putter will "open" or fall out of perpendicularity with the ball when swinging to take the putt.

[0006] A lot of experimentation and analysis has been done in the field. Of all the categories above, one of the most important is that relating to the direction of the putter face

(perpendicularity or normal to the ball) at impact, "levelness" in general usage. Where the putter face is aimed at the moment of impact with the golf ball has an enormous effect upon the result of the putt or at least on the path the ball travels.

[0007] Most putting training aids incorporating a swing through approach attempt to assist the golfer in correcting the swing of the putt and the motion of the putter face during the swing. If correctly utilized, swing tracks or guides will give useful feedback to the golfer through an apparatus that controls the deviation of the putter head. In theory the golfer will be able to see and feel the deviation of the putter head in the swing and, with practice, become more adept at positioning the club head and holding perpendicularity more easily. However, these devices are generally cumbersome to use, and do not store and transport easily with equipment. There continues to exist a significant need for a level based putting training aid that is easy to use and gives valuable, accurate feedback.

[0008] 2. Description of Prior Art

[0009] Related Patents and Noted Patents are D405,145.

[0010] The need for a putter trainer that is very accurate, non-

cumbersome and easy to calibrate shows that there is still room for improvement in the art.

SUMMARY OF INVENTION

[0011] The present invention relates to a putter trainer that is accurate, non-cumbersome, easy to calibrate and use.

[0012] It is the object of the present invention to provide a putter trainer that allows a user to swing the putter level and maintain perpendicularity of the putter face to the ball.

[0013] It is another object of the present invention to provide a putter trainer that is non-cumbersome to use and easy to calibrate.

[0014] The invention comprises a device for dual action level that allows the user to see when his aim or club holding may be out of level in two planes. The device consists of a main housing, incorporating a level, which is affixed to the putter shaft on or near the grip. The device is composed of two main members connected via a hinge. The two units are described as a level liquid chamber component unit and a putter shaft clamp unit. The level is attached to the shaft through the means of a simple grip clamp encased in the plastic housing. The invention is designed to be removed and reattached easily and without need for frequent adjustment or calibration.

[0015] The proper use of the invention simultaneously addresses four common problems for golfers: head angle, lie angle, swing plane and putter face squareness, and inconsistent and off-center impact points. The device can be used indoors or outdoors and with or without a ball.

BRIEF DESCRIPTION OF DRAWINGS

[0016] Without restricting the full scope of this invention, the preferred form of this invention is illustrated in the following drawings:

[0017] FIG 1 shows the level and housing on a putter;

[0018] FIG 2 shows the components of the level unit;

[0019] FIG 3 shows the level sub assembly;

[0020] FIG 4 shows the level liquid chamber and air bubble;

[0021] FIG 5 shows the level liquid chamber lie angle adjustment mechanism;

[0022] FIG 6 shows a front view of the level system on a putter head;

[0023] FIG 7 shows a back view of the level system on a putter head;

[0024] FIG 8 shows a side view of the level system on a putter head;

[0025] FIG 9 shows a top view of the level system on a putter head;

[0026] FIG 10 show the device using a gimbel as a leveling means.

DETAILED DESCRIPTION

[0027] The following description of a putter level is demonstrative in nature and is not intended to limit the scope of the invention or its application of uses.

[0028] There are a number of significant design features and improvements incorporated within the invention.

[0029] As shown in Figs 1 –9, the putting level device 1 is composed of two main members connected via a hinge 90. The two units are described as a level liquid chamber component unit 60 and a putter shaft clamp unit 70. It should be noted here that a key concept of this design is that the design can be used with all styles of putters 80.

[0030] The level system clamp member 70 gets attached on or near the putter grip portion 10 of a conventional putter 80. The level system device 1 has two molded in slots opposite each other for allowing spring 53 based arms 50 and 56 to apply pressure to the shaft 80 therefore securing the unit 1 to the putter shaft or grip portion 10 of the putter 80. The clamp arms 50 and 56 of the level unit

have a pocket created in the open portion to allow for a material that has greater adhesion. This part allows the level system to adhere to the putter and resist torsional twisting about the putter axis.

[0031] As shown in Fig. 5, the level system device 1 has a method of adjusting the "lie" of the putter 80. The lie of the putter 80 is the angle of the putter shaft relating to the floor or flat surface that the user may be standing on. It is also described as the angle of the putter shaft to the club head 20. The lie of a putter 80 is typically 71 degrees measured from the floor to the shaft.

[0032] The level system device 1 is hinged at the point in which the user can adjust the angle of the lie via a worm drive gear 48. The deviation of the angle ranges from 0 to 10 degrees to either side of a normal putter lie or 71 degree. The user rotates the drive gear 48 either left or right to incline or decline the lie angle. The worm gear 48 or screw is an injection-molded part that is sandwiched between the top 46 and bottom 54 housing of the level system device 1.

[0033] The clamp level arms 50 and 56 are also captured between the top 46 and bottom 54 housing. Between the 2 cantilevered clamp arms is force means such as a com-

pression spring to apply clamping force on the shaft 80. Also captured in the top 46 and bottom 54 of the clamp housing is an elastomeric part 52. This elastomeric part has a higher coefficient of friction than the other parts that helps maintain the unit on the putter 80 and resist torsional twisting.

[0034] The level liquid chamber housing 60 consists of top 42 and bottom 43 chamber housings as well as a external casing consisting of a top 44 and bottom 58 housing. The liquid chamber 64 consists of a top 42 and a bottom 43 that is injection molded in a clear, colorless material. The liquid chamber 62 is filled with a liquid material consistent with that of most commercially available levels. The top of the liquid chamber 64 is filled with fluid and sealed shut via ultrasonically welding the top to the bottom of the liquid chamber. The liquid is contained in the housing 60 with a small air bubble 66 that remains as the direction indicator. The air bubble 66 will always move to the highest point in the chamber 64.

[0035] The top portion of the liquid chamber 62 has a pad printed image 68 on the face. This pad print consists of a long oval track that illustrates the target line and air bubble's levelness. It is this pad print or silk-screened image

68 that the user uses to keep the air bubble 66 in the boundaries while swinging. If the air bubble 66 is moving inside of this track the golfers swing is level. The chamber 64 allows the air bladder 66 to move freely on two planes giving the user the ability to judge levelness on both X and Y planes. The liquid chamber 64 is then captured in a secondary housing 60. This secondary housing 60 has a molded in pivot 90 and "tongue" 92 that are captured in the clamp housing 70. The "tongue" 92 is the means by which the user adjusts the angle of the lie of the liquid chamber 64. Adjusting this lie allows the user to find the lie of the putter they use. The tongue 92 engages the drive gear 48. The drive gear 48 is rotated to allow the user to adjust the lie of the liquid chamber 64.

[0036] The level system device 1 is used by clamping the level system device 1 on the putter 80 on or just below the putter grip 10. The device 1 is placed on the putter 80 parallel with the face 20 of the putter 80 and in clear sight to the user. Once the device 1 is placed on the putter 80 the lie of the putter 80 is set via the drive gear 48 described above. Once the lie is calibrated it will not to be changed again providing that it is used with the same putter 80. Once the lie is set the user can take slow

strokes. The user is trying to keep the air bladder 66 in the oval pad printed track 68. The air bladder 66 can deviate in and out of the oval. The closer the user maintains the air bladder 66 in the track the more normal or perpendicular the putter face 20 is to the target line and ball 30 or the more level the putter 80 is.

[0037] 2nd Mechanical embodiment:

[0038] A second method for creating a device that tracks the users swing would be done through the means of a mechanical gimbal 100 Fig. 10. The gimbal 100 would take the place of the liquid chamber 64 and would always keep the ball 101 or indicator in the top or vertical position replacing the air ball 66 and the liquid chamber 64. A gimbal is described as the following: A device consisting of two rings mounted on axes at right angles to each other so that an object, such as a ship's compass, will remain suspended in a horizontal plane between them regardless of any motion of its support. Often used in the plural. Also called gimbal ring.

[0039] Advantages

[0040] The previously described version of the present invention has many advantages. The device allows for a putter

trainer that is very accurate, non-cumbersome and easy to calibrate.

[0041] Although the present invention has been described in considerable detail with reference to certain preferred versions thereof, other versions are possible. Therefore, the point and scope of the appended claims should not be limited to the description of the preferred versions contained herein.

[0042] As to a further discussion of the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

[0043] With respect to the above description, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

[0044] Therefore, the foregoing is considered as illustrative only

of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.